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New Plants from Wyoming.—II.*

By Aven Nelson.

THLASPI GLAUCUM (A. Nelson).

Thlaspi alpestre glaucum A. Nelson, First Rep. Fl. Wyo. 84. 1896.

The perennial, basal part of stem freely branched, the several or many herbaceous stems simple, erect or ascending, 1–3 dm. high ; root leaves numerous, petioled, from oval to oblong or obovate, entire or obscurely repand-denticulate ; cauline leaves deltoid-auriculate or oblong, entire, 10–20 mm. long, smooth or even glaucous ; raceme dense in flower, much elongated in fruit (5–15 cm.) ; sepals greenish, thin, ovate ; petals white, spatulate, about 6 mm. long ; pods obovate, obtuse or emarginate ; pedicels divaricate, 10–14 mm. long.

In 1897 an abundance of material of this form was secured, an examination of which leads me to think that it is worthy of specific rank. Its habitat is sub-alpine in open parks or among open spruce timber. It is separated from *T. alpestre* by its uniformly larger size, numerous stems, numerous and larger stem leaves, longer pedicels and raceme (in fruit), longer, greenish sepals, etc.

Type specimen in Herb. University of Wyoming, no. 4176, Battle Lake, August 16, 1897. Prof. Henderson's no. 2893 from Kendrick, Idaho seems to be nearly the same.

MENTZELIA COMPACTA.

Annual, 2–2.5 dm. high, numerously and compactly branched ; stems whitish, pubescent, somewhat brittle ; leaves numerous, sessile, entire, obtuse, from broadly linear at base to almost oval at summit, generally ovate-oblong, 2–3 cm. long, rough-hirsute, more coarsely and sparsely so above ; flowers yellow, small, numerous in compact cymes at the ends of the branches, sessile, about 3 mm. broad ; calyx-lobes lanceolate-ovate, shorter than the corolla, petals obovate, about 4 mm. long; stamens 15, anthers small, sub-spherical; capsule linear-clavate, 10–13 mm. long, 10–12-seeded; seeds in one compact row, smooth, longitudinally groove-angled, in form from frustra of triangular prisms to rhomboidal cuboids, faces about 1 mm. long.

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* I am under obligations to Dr. Underwood for securing for me the comparison of these plants with specimens in the Columbia Herbarium ; and to Mr. P. A. Rydberg, for making such comparison. Mr. Rydberg's well-known familiarity with northwestern plants makes his examination of these particularly satisfactory.

Observed but once, possibly local or rare; Parkman, Sheridan county, Wyoming, July 22, 1896 ,no. 2454. Type specimen in Herb. University of Wyoming.

GENTIANA ELEGANS.

Annual, 2–3 dm. high, branched from the base, the 2–20 stems simple or nearly so, each stem or branch terminated by a single flower; leaves 3–6 pairs on each stem, appearing crowded toward the base in the many-stemmed specimens, mostly obtuse, the lower petioled, obovate to broadly spatulate, the upper sessile, oblong or narrower; calyx-lobes nearly equal and similar, equalling the tube in length, bearing in the sinus a fringe of short, obscurely glandular hairs: corolla 4–5 cm. long, deep blue with lighter patches or streaks downward, the lobes obovate-oblong, dentate around the summit, fimbriate on the sides: capsule stipitate; style nearly as long as the capsule proper, the stigma sub-orbicular, dentate.

This handsome species is common in the higher mountains of Wyoming at altitudes from 9000 to 10000 feet. Specimens of it have been distributed as "*Gentiana serrata* near var. *holopetala* Gray," as follows: no. 865, Union Pass, Wind River Mountains, August, 1894; nos. 1539, 1725, 1766 from the Medicine Bow Mountains, collections of 1895.

It differs strikingly from *G. serrata* Gunner (*G. detonsa* Rottb.) in its mode of branching, its broader obtuse leaves, in its dentate (not fimbriate) corolla-lobes, in the position of the fringe of hairs in the calyx, which is in the sinus, and not at the base of the lobes, and in its stipitate, styliferous capsule. *G. serrata,* moreover, is of the low, wet grounds of northern stations; *G. elegans* is met with only, so far as my observation goes, in the mountains at almost fixed altitudes. As the foregoing are essential characters it can hardly be united with the var. *holopetala* for again the narrower leaves, the character of the pistil and other points mentioned cut it out. *G. serrata holopetala* seems to be less branched, more slender and belongs to a more western range.

Type specimen in Herb. University of Wyoming, no. 1539, Cummins, July, 1895.

GENTIANA ELEGANS UNICAULIS.

Many of the characters of the species but smaller in every way, 1–2 dm. high, rarely if ever branched, the simple stems bearing 3–5 pairs of mostly obtuse leaves; the lower leaves small, obovate to oblong, the upper pairs longer and somewhat narrower; peduncles comparatively long; corolla-lobes obscurely dentate around the summit, mostly entire at the sides.

This form like the species is of the higher mountains, usually of more alpine stations. It often occurs in large, evenly planted beds, the plants nearly uniform in size.

Type specimens in Herb. University of Wyoming, no. 4173, Battle Lake, Carbon County, Wyo., Aug. 16, 1897.

DOUGLASIA BIFLORA.

Cespitose, the numerous suffrutescent branches crowned with a rosulate cluster of leaves, the dead clusters from previous years persisting and marking the gradually lengthening branches, only the current year's growth above the surface of the gradually elevated mound in which the stems are buried; leaves lanceolate-linear, blunt, 9–12 mm. long, glabrous or nearly so, margins obscurely denticulate, imbricate-clustered; peduncles pubescent, fascicled, 3–5 rising out of the terminal rosette of leaves, 1–3 cm. long; inflorescence a cyme with only the terminal and one lateral flower developed or sometimes only the terminal one, the terminal blossom almost sessile in the two-bracted involucre, pedicel of the lateral one 1 cm. or more in length; calyx campanulate, tube scarious, lobes foliaceous, lanceolate, equalling the tube; corolla-tube as long or longer than the calyx, the lobes nearly equalling the tube, obovate, truncate, emarginate or few-toothed; capsule turbinate-spherical.

Secured but once, about the summits of the Big Horn mountains near Dome Lake, July 18, 1896. Type specimen in Herb. University of Wyoming, no. 2450.

PHACELIA DESERTA.

Stem single, erect from a stout perpendicular perennial root, 1–2 dm. high, densely leafy at base, sparsely so upward, the whole plant canescent with a short close pubescence, obscurely glandular; leaves petioled, narrowly oblong in outline, pinnate, the pinnae nearly oval and crenately toothed, 5–9 pairs which are nearly equal in size; stem branched at the summit giving a short dense paniculate inflorescence of scorpioid cymes; sepals equal, lanceolate-oblong; corolla bright blue, turbinate-campanulate, 7 mm. long, lobes equalling or surpassing the tube, lobes rounded, entire; the obliquely vertical lamellae broad and conspicuous, loosely united over the filament; anthers short-oblong; filaments and style conspicuously exserted; style cleft below the middle; ovary oval, pubescent, cells two-ovuled; ovules oblong; mature seeds not at hand.

Distinctively a desert plant, occupying the high, white, dry and barren bluffs known as the Green River shales. It develops early while the moisture from the spring snows make growth possible.

Type specimen in Herb. University of Wyoming, no. 3050, Green River, May 31, 1897.

PHLOX MULTIFLORA.

Suffrutescent as to the caespitose, much branched, prostrate base, the numerous herbaceous stems nearly erect, 6–10 cm. high, the annual branches simple, one-flowered; leaves broadly linear, glabrous, apiculate, 1–2 cm. long, opposite or fascicled; peduncles finely pubescent, 1–3 cm. long; calyx angled by the prominent midrib of the lobes, membranous in the sinus only, lobes linear-apiculate, equalling the tube; tube of the corolla exceeding the calyx, lobes obovate, entire, 1 cm. long; style equalling the calyx.

The affinities of this plant are with the *P. longifolia* group. It has been distributed under no. 182 from Laramie Hills, mostly as *P. longifolia* Nutt., but from which, I now think, it is wholly distinct. Its more caespitose growth, shorter broader leaves, simple branches, less membranous calyx and numerous flowers easily separate it. It is very abundant on the moister slopes and valleys of the Laramie Hills at 8000 to 9000 ft., flowering from late May till late June.

Type specimen in Herb. University of Wyoming, no. 3175, June 16, 1897.

GILIA ATTENUATA (Gray).

Gilia aggregata, var. *attenuata* Gray, Syn. Fl. 2^1: 145. 1886.

It seems to me that only lack of sufficient material can justify leaving this as a variety. The points in which this differs from *G. aggregata* need to be emphasized. They are, as pointed out by Dr. Gray, the considerably longer corolla-tube (about 3.5 cm. as against about 2.5 cm.), the long, gradually-acuminated corolla-lobes, the filiformly-attenuated calyx-lobes, the constant inclusion of both style and stamens (the position of the stigma and of the anthers varies between 5 mm. and 10 mm. below the throat of the tube), and the white corolla (tube somewhat marked with pink).

It may be added that the *G. attenuata* is hoary or villous-pubescent, especially on the branchlets and calyx ; the inflorescence much denser ; calyx more glandular and the basal leaves green and glabrate. It seems probable that it will be found to belong to considerably higher altitudes than *G. aggregata.*

Excellent specimens were secured at Battle Lake, Carbon Co., at an altitude of about 10000 feet, Aug. 16, 1897, no. 4189.

PENTSTEMON COLLINUS.

Cespitose, the rootstocks much branched and closely matted ; stems numerous, unbranched, erect, often wavy rather than strict, 2–3 dm. high, puberulent their whole length, glandular upward ; root leaves numerous, entire, clustered on the crowns of the rootstocks, a dull or dead green, glabrous but scarcely smooth, midrib prominent on the lower face, petioles slender, about equalling the blade, blade elliptic-oblong, acute at both ends, 2–3 cm. long ; stem leaves sessile or tapering into a marginal petiole, narrow-oblong or spatulate, 2–4 cm. long ; upper leaves shorter, lanceolate-linear, passing into the shorter lanceolate bracts ; thyrsus strict, interrupted, 5–9 cm. long, the whole inflorescence minutely glandular-puberulent ; peduncles 3–5-flowered, the flowers crowded ; sepals broadly lanceolate, scarious margined, loosely spreading, one-third as long as the corolla ; corolla deep blue, slender-tubular, but slightly inflated upwards, the lobes short, spreading, sparsely hairy in the throat ; sterile filament comose on the flattened apex ; anthers dehiscent through the junction of the two cells, not explanate.

Its general aspect and floral characters suggest *P. humilus* Nutt. but it may be distinguished by its more caespitose habit, its more compact root system, its rosulate, pointed root leaves, its smaller, more tubular corolla with shorter lobes, the erect, wavy, puberulent stems and more rigid and paler leaves.

Its habitat seems to be the dry, gravelly hilltops in the foothills. Type specimen in Herb. University of Wyoming, no. 2960, Evanston, May 28, 1897.

PENTSTEMON RADICOSUS.

Cespitose, the short rootstocks producing an inordinate number or coarsely fibrous roots which form an almost unbreakable tufted mat; stems numerous, slender, fascicled, strict and erect, forming a dense bunch which crowns the compact, tufted root system, 2–3 dm. high; stems and leaves puberulent, obscurely glandular upward including the inflorescence; root leaves minute, oblanceolate, or none; stem leaves numerous, oblong-linear, very short-petioled or sessile by a narrowed base, 2–4 cm. long, narrower upward and passing into the linear bracts; inflorescence a compact thyrsus of peduncled cymes, 4–8 cm. long; peduncles 8–12 mm. long, about 3-flowered, pedicels very short; sepals broadly lanceolate, somewhat scarious, about one-third the length of the corolla, tips spreading; corolla tubular, dark blue with a lighter streak down the lower side of the tube, 14–18 mm. long, upper part of the tube slightly inflated, bilabiate, the lower lip longer, very sparsely white bearded, lobes entire, rounded, 3–4 mm. long; sterile filament included, straight, slightly flattened toward the apex, the short yellow beard straight, stiff, of nearly uniform length, at right angles to the filament, dense at apex, more sparse downward past the middle; anthers purple, dehiscent through the junction of the cells but not explanate.

A well marked species easily recognized by its compactly bunched stems, its striking root system and its very numerous, small, uniform leaves. Habitat, gravelly hillsides.

Type specimens in Herb. University of Wyoming, no. 2962, Evanston, May 28, 1897; no. 3089, Point of Rocks, June 1, 1897.

PENTSTEMON ARENICOLA.

Perennial from long vertical branched woody rootstocks, from the crown of each branch one to several simple stems, 2–3 dm. high; entire plant glabrous and stem leaves somewhat glaucous; lower leaves petioled, oblanceolate to broadly spatulate; middle stem leaves spatulate, tapering into a margined petiole, 4–5 cm. long; upper stem leaves sessile by a broad base, from narrowly oblong to lanceolate, abruptly acute or apiculate, 3–4 cm. long; inflorescence short, spiciform, leafy below, the upper bracts short, ovate-lanceolate; sepals broadly laneeolate, slightly scarious, one-fourth the length of the corolla-tube; corolla tubular or but slightly inflated upwards, blue, 12–15 mm. long, its lobes oval, spreading, 3 mm. long, naked in the throat; sterile filament equalling the tube, its hooked flattened apex comose, more sparsely hairy down one side for half its length; anthers dehiscent through the junction of the two cells but the cells hardly confluent, not explanate.

This plant has the habit of *P. coeruleus* Nutt., but is readily distinguished by its broader, shorter leaves; its shorter inflorescence and smaller flowers; its broader, shorter and slightly scarious sepals, etc.

Abundant in the sand dunes in the hill region of the Red Desert, near Point of Rocks. Collected June 1, 1897, at which time it was nearly out of blossom. Type specimen in the Herb. University of Wyoming, no. 3090.

PENTSTEMON RYDBERGII.

Perennial from horizontal rootstocks which give rise at somewhat regular intervals to vertical branches; from the crowns of these spring long slender floriferous stems or very short leafy branches; glabrous throughout, 3–5 dm. high; radical leaves and those on the sterile branches oblong, obtuse, on slender petioles as long as the blade or longer; cauline leaves few, sessile by a broad base, narrowly oblong; the lowest pair of bracts leaf-like, broadly linear; the two or more verticils of the interrupted spike many-flowered, the lower one usually distant; corollas 10–14 mm. long, light blue; sepals scarious, somewhat lacerate-margined.

This beautiful form has enough points in common with *P. confertus* Dougl. to suggest that species which is probably the nearest ally. It was met with in abundance in an aspen grove in a draw in the Laramie Hills, July 1, 1897. Type specimen in Herb. University of Wyoming, no. 3214. I take pleasure in naming this for Mr. P. A. Rydberg, whose generous assistance I have acknowledged on a previous page.

WULFENIA WYOMINGENSIS.

Perennial from a short rootstock, bearing numerous fascicled roots; stems 1–3 from each rootstock, puberulent or softly pubescent, 1–2.5 dm. high; radical leaves petioled, from broadly ovate to oblong, crenate-dentate, rounded or subcordate at base, mostly obtuse at apex, very variable in size, obscurely puberulent; cauline leaves sessile, small, diminishing upward, broadly ovate, mostly acute; bracts broadly lanceolate, narrower toward the apex of the spike, pilose-pubescent; calyx anteriorly cleft to the base, posteriorly into two or three lobes to about the middle, the lobes either entire or (if only two) with two tooth-like lobes; corolla wanting; stamens conspicuous, filaments twice the length of the calyx, anthers large, the cells slightly divergent below; style equalling the stamens; stigma small, capitate; ovary pilose-pubescent; capsule emarginate, large, turgid, puberulent, protruding from the cleft side of the calyx.

Common in the Laramie Hills at 8000 to 9000 feet where it develops early. It seeks the loose, rich soil of the valleys and slopes among the sage-brush. It has the habit of *W. rubra* (Dougl.) Greene and is easily mistaken for that species. However, the peculiarity of its calyx alone will easily separate it. Distributed by me under the name *Synthyris rubra* Dougl. as nos. 29 and 1242. Type specimens in Herb. University of Wyoming.

WULFENIA GYMNOCARPA.

Perennial from a short rootstock bearing numerous fascicled roots; stems simple, 1–3 from each rootstock, curved ascending, puberulent or soft-pubescent, 1–3 dm. long; radical leaves numerous, petioled, mostly ovate-oblong, rounded at base or rarely subcordate, from coarsely to obscurely crenate-denticulate, glabrate or puberulent; cauline leaves sessile, small, from ovate to oblong-lanceolate, smaller and narrower upward where they pass into the bracts; spike short and crowded, 3–8 cm. long, pilose-pubescent, bracts from broadly lanceolate at base of spike to linear at summit; calyx reduced to three, or more usually to two sepals, these on the posterior side, the anterior face of the pistil being naked; sepals distinct to the base or occasionally united one-third of their length, linear-lanceolate, soft-pubescent; corolla wanting; stamens but little longer than the sepals, apparently often unequal, anthers small, the cells not divaricate: ovary pubescent, style long, equalling the stamens but with the development of the capsule carried out beyond them; capsule orbicular, much flattened at maturity, equalling or longer than the style, naked but for the slender bract and sepals closely approximated on its posterior angle.

Like the preceding, this has the general habit of *W. rubra.* It is with some hesitation that I add two more species in which the corolla is wanting, to the genus *Wulfenia.* But these two certainly lend strength to Dr. Greene's contention * that the number of calyx-lobes cannot in this group be used as a diagnostic character by which to separate *Synthyris* from *Wulfenia.*

Type specimen in Herb. University of Wyoming, no. 2959, from Evanston, May 29, 1897.

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* Erythea, May, 1894.

SCUTELLARIA VIRGULATA.

Perennial from slender oblique rootstocks, the nodes of which are often marked by scales; stems puberulent, simple, one or more from the crown of the rootstock, slender, strict or sometimes curved, leafy throughout, 2–3 dm. high; leaves entire, nervose, bright green, puberulent under a lens, nearly sessile; lower stem leaves small or rarely wanting, obovate to oblong, 1–2 cm. long, much shorter than the internode; middle stem leaves oval to oblong, obtuse, about 3 cm. long, equalling the internode; upper stem leaves from oblong to lance-linear, longer than the internodes, appearing crowded, obscurely glandular; flowers blue, borne singly in the axils of the upper pairs of leaves, resinous-puberulent; pedicels about one-half as long as the calyx; calyx green even as to the crest; corolla-tube gradually dilated upward, about 2 cm. long, glabrous in the throat; nutlets minutely tuberculate.

Closely allied to *S. Brittoni* Porter but with slenderer rootstocks, longer, slenderer, more virgate stems and fewer flowers. In *S. Brittoni* the internodes are uniformly shorter than the leaves, in this only the upper leaves exceed the internodes.

In loose soil among the stones on the partly wooded summits of the Laramie Hills at about 9000 feet. Type specimen in the Herb. University of Wyoming, no. 3218, Green Top, June 28, 1897.

RUMEX TUBEROSUS.

Perennial by a horizontal woody rootstock on the under side of which are borne large fascicled, oblong-elliptic tubers; glabrous throughout; stem stout, nearly erect, conspicuously grooved, 2–4 dm. high; leaves large, moderately thick, somewhat crisped on the edges, crowded at the base, smaller and more distant upwards, all petioled, lower oblanceolate-oblong; 10–15 cm. long, 3–5 cm. wide, upper lanceolate; ocreae large and thin; racemes erect; bracts few, leaf-like, lanceolate, seemingly deciduous, the inflorescence at length naked and interrupted; calyx red, conspicuously winged at maturity; pedicels filiform, as long or longer than the wings; wings cordate, 10–13 mm. long, no callosities, deep red, lighter with age; style branches divergent; achene 10 mm. long, smooth with margined angles.

This species seems most closely allied to *R. venosus* Pursh which it simulates in habit. It is, however, a larger plant while the wings of the fruit are smaller. It is strikingly separated from this, and all other species known to the writer by its large tuberous rootstocks. Its habitat also is distinctive, for it was observed only in the most pronounced alkali soils—in the white, friable, ash-like soil, containing 5 to 15 per cent. of salts, found on some portions of the Bitter Creek flats in the Red Desert.

Type specimen in Herb. University of Wyoming, no. 3114, Bitter Creek, June 3, 1897.

A Correction.

ATRIPLEX EREMICOLA. (*Atriplex fruticulosa* G. E. Osterhout, Bull. Torr. Bot. Club, **25**: 207 Ap. 1898. Not *A. fruticulosa* Jepson, Pittonia, **2**: 306, 20 S. 1892.) Since the specific name *fruticulosa* is antedated in this genus, I substitute the above name for the one which I first published.

GEORGE E. OSTERHOUT.

NEW WINDSOR, COLORADO,
April 19, 1898.